

# MARINE REVIEW.

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No. 23.

## Proposed Railway Under the English Channel.

The junction of England with the continent of Europe has already been the subject of numerous projects. Without going back to the project for a subterranean route recommended in 1892 by Mr. Mathieu, engineer of mines, it will suffice to recall the more recent project for a submarine tunnel, proposed by Mr. Watkins, and for a gigantic bridge, whose promoters were Messrs. Schneider and Hersent, as well as the modification of the latter proposed by Mr. Bunau-Varilla. All these projects have been abandoned, as much on account of the objections urged against them as by reason of the incomprehensible hostility that the English have always manifested toward all enterprises of this kind. But Sir Edward Reed, a member of the English parliament, former lord of the treasury and engineer in chief of the admiralty, has taken up the question again with a project which has been received with favor by a large number of members of parliament, and which therefore seems to have serious chances of success, and the more so in that it avoids the difficulties and objections that were urged against its predecessors.

The project consists in simply submerging, between a point of the French coast situated in the vicinity of Cape Gris-Nez and another on the

continues to emerge (Fig. 3), and receives the end of the following section, the junction being made by huge hinges. The caisson of this section is sunk, and so on. When all the sections are in place, the formation of the joints is begun. What we have said about one tube applies also to the other, but, in reality, Sir Edward prefers to sink the sections of the two tubes simultaneously in properly cross-bracing them, in order to form a sort of rigid girder that would present much greater resistance to transverse stresses.

The caissons forming piers are designed to support the tubes at a slight distance from the bottom of the sea. This arrangement possesses the double advantage of doing away with any preliminary dredging, since it will be possible to give the piers the height necessary to avoid the slight changes of level of the bottom and of assuring a free circulation of the marine currents beneath as well as above the tubes. It permits, besides, of so regulating the system that the upward thrust partially balances the weight of the trains in each section. The stresses to which the tube will be submitted by the fact of such passage will be diminished by so much, and, therefore, much better conditions of resistance will be obtained than in an ordinary bridge. The use of two distinct tubes will

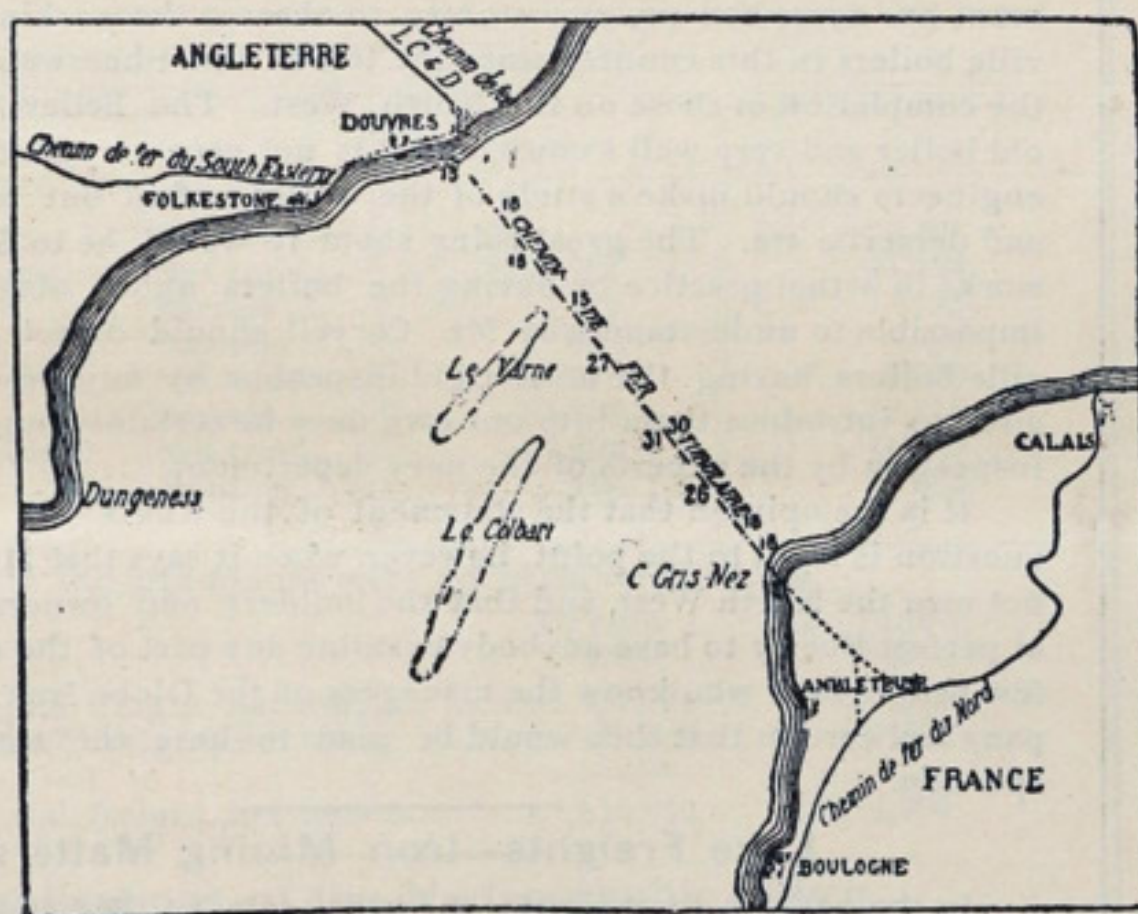


Fig. 1.—MAP SHOWING PROPOSED CHANNEL TUNNEL.

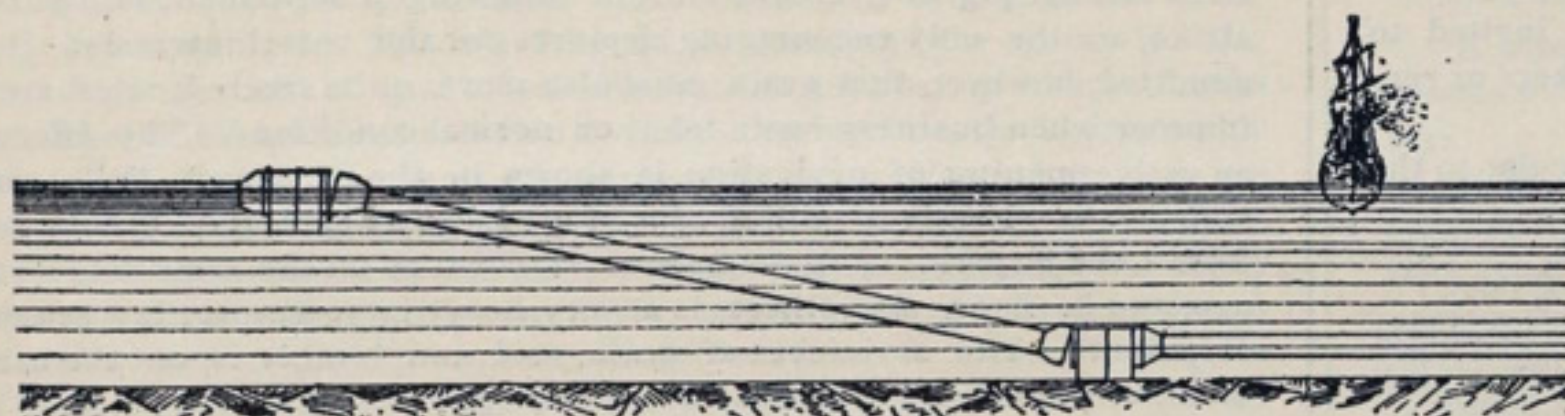


Fig. 3.—PROCESS OF SUBMERGING SECTIONS OF TUBE.

English coast located between Dover and Folkestone, two tubes that would constitute two absolutely separate tunnels, each serving for the passage in one direction of trains drawn by electric locomotives. Referring to Fig. 1 it will be seen that the configuration of the bottom in this part of the channel presents on each side a regular declivity that ends in a gentle slope at a line of greater depth. The soundings made at distances of a mile apart gave as successive depths, starting from the English coast, 82, 88, 88, 95, 98, 88, 98, 138, 160, 184, 174, 175, 160, 138, 98, and 82 feet. It will be seen, then, that the mean slope of each tunnel would not much exceed 0.08 inch to the foot. There would therefore be found excellent conditions for traction.

The tube would be of steel plate with double walls (Fig. 2), and the intervening space would be re-enforced by I beams and filled in with concrete. The putting in place would be effected by sections of 300 feet, hermetically sealed at each end and floated to the place where they were to be submerged. One of the extremities of the section having been fixed upon a sort of caisson that will afterward perform the functions of a pier, the caisson is weighted so as to cause it to sink. The other extremity

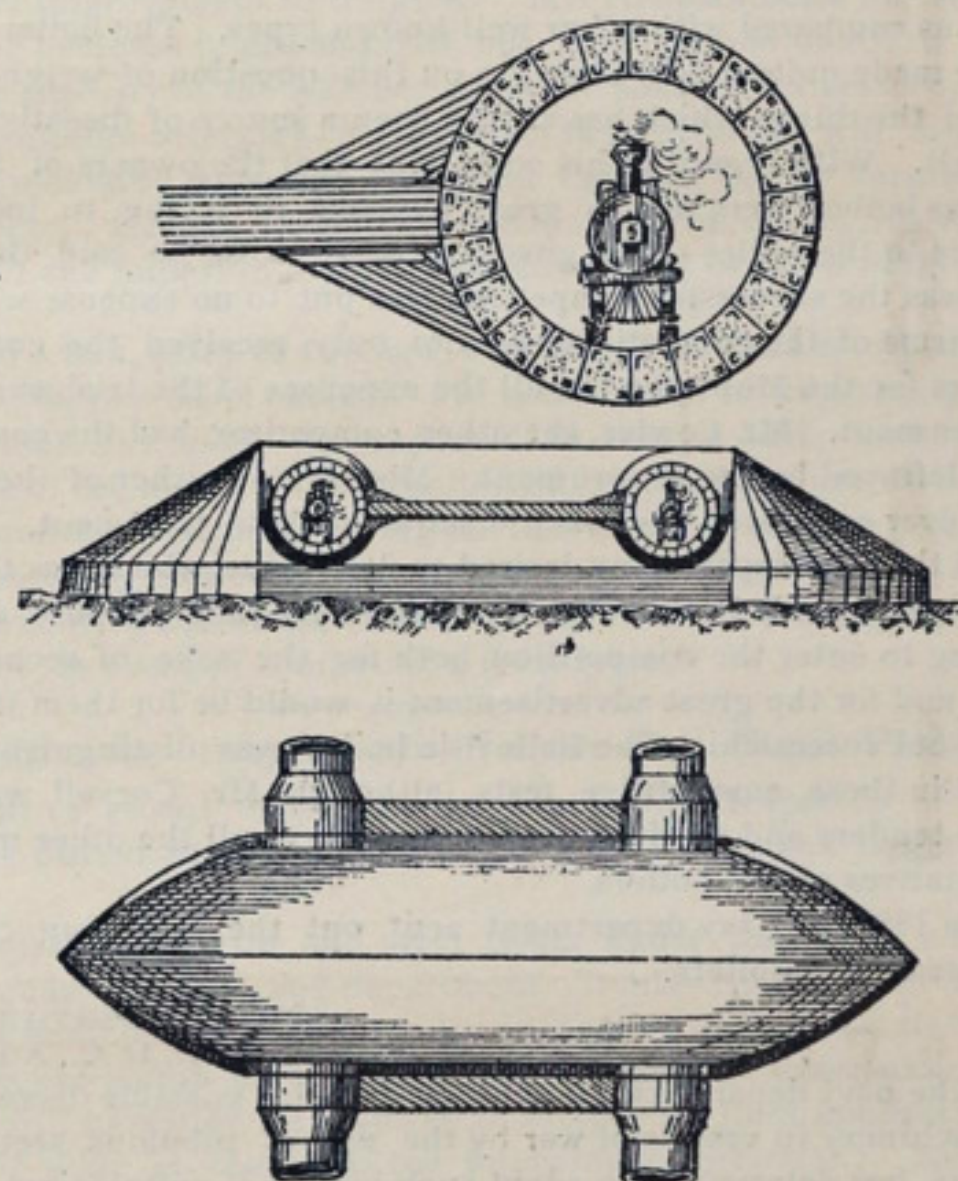


Fig. 2.—TRANSVERSE SECTION AND PLAN OF THE TUBES AND OF A PIER.

prevent all chances of accidents and will have the great advantage of realizing the important problem of the aeration of the tunnel, without any expense and in as satisfactory a manner as possible. In fact, each train will have somewhat the effect of a piston that forces the vitiated air before it and sucks in pure air behind it to take the place of the former.

The total cost of the installation of the tubes is estimated by Mr. Reed at \$75,000,000, which is less than half the cost anticipated by Messrs. Schneider and Hersent for construction of a bridge across the channel.—Revue Universelle.

An effort will be made by the Cleveland Chamber of Commerce to provide, free of charge, quarters for the branch of the hydrographic office that is to be established here. A popular subscription will also be started for a time ball service similar to that operated in connection with hydrographic offices elsewhere. In Chicago assistance of this kind was given the service, and it is hoped that the effort in Cleveland will be successful. Lieut. Blow, U. S. N., in charge of the Chicago office, will probably address the chamber at an early date on the work of the service.



### Mr. Coryell and the Naval Engineers.

Special Correspondence to the MARINE REVIEW.

WASHINGTON, D. C., June 7.—I called at the bureau of steam engineering, navy department, the other day, and found that the officers of the bureau were quite surprised at the short note in the REVIEW of May 31, where it was stated that Mr. Miers Coryell, the agent of the Belleville boiler in this country, expressed strong objection to having the Belleville boilers on the steamer North West inspected by two officers of that bureau. The article stated that Mr. Coryell charges the navy department with retarding the progress of tubulous boilers in the United States, and that they would not show interest in the Belleville generator except for the recent order by the British admiralty for placing some sets in English naval vessels. Mr. Coryell also commented on the expense to which the owners of the Ward and Cowles boilers were put in their effort to introduce their boilers in the navy.

The officers at the bureau of steam engineering say that they are at a loss to understand Mr. Coryell's objections to their inspecting the Belleville boilers on the North West, for the reason that for several years past he has written to the bureau time and again urging that one or more officers should be sent to France to inspect the boilers working on steamers there. They say further that Mr. Coryell is entirely mistaken in his idea that the interest in the Belleville boiler is awakened by the recent action of the British admiralty, for the reason that the bureau of steam engineering took the first opportunity which offered itself in this country to make a test of the Belleville boiler, when Mr. J. M. Forbes, the owner of the yacht Sheerwater, gave them the chance to make a test of the Belleville boiler on that vessel in November, 1887. The test of this boiler, they say, has always been a thorn in the flesh of Mr. Coryell, who has made all manner of explanations to offset the comparatively poor showing which the boiler made on that occasion. The boiler was managed by the regular crew of the vessel, and the navy department experts were merely present to observe and record the data.

As is well known, the great aim in using coil boilers for naval vessels is to secure great lightness, a thing in which the Belleville boiler is deficient as compared with other well-known types. The boiler of the Sheerwater made quite a poor showing on this question of weight, and this is one of the things which has always been a source of dissatisfaction to Mr. Coryell. With regard to his complaint that the owners of the Ward and Cowles boilers were put to great expense in trying to introduce their boilers to the notice of the government, it is to be said that Mr. Ward, who was the successful competitor, was put to no expense whatever, as by the terms of the competition he not only received the contract for the boilers for the Monterey but all the expenses of the trial were paid by the government. Mr. Cowles, the other competitor, had the cost of fuel used also defrayed by the government. Moreover, neither of these gentlemen have ever expressed any dissatisfaction at their treatment. They understood that the department desired to determine which was the best of the coil boilers made in this country adapted for their purpose, and they were willing to enter the competition both for the sake of securing the contract and for the great advertisement it would be for them if their boiler came out successful. The Belleville boiler was distinguished by its absence in these competitive tests, although Mr. Coryell was invited to make tenders and received the same notice as all the other makers or representatives of coil boilers.

In 1888 the navy department sent out the following circular to the makers of coil boilers:

NAVY DEPARTMENT,  
WASHINGTON, D. C., Aug. 2, 1888. }

The navy department, having in view the possible decrease in weight of machinery in vessels of war by the use of tubulous, sectional or coil boilers, has determined to adopt such boilers, if suitable can be found, for a portion of the steam power of one or more of the vessels about to be built. To this end, manufacturers who wish to offer such boilers for use by the department are hereby invited to furnish plans of the same, adapted to an armored coast defense vessel, on or before Sept. 15, 1888. Plans must be accompanied by certificates that boilers of the same make are or have been in successful use at sea or on shore. Plans showing the space in the vessel available for boilers, particulars of the duty required, and other information may be obtained upon application to the bureau of steam engineering. The boiler which appears to the department, after investigation, to be the best for the purpose, taking into account the evaporative efficiency, the dryness of the steam, the weight of the boiler, the weight of the water contained, the accessibility for repairs, the ease of making repairs, the simplicity and interchangeability of the parts, the space occupied, the ease of firing and regulating the feed, the suitability for working in battery, the capability of long continued steaming without cleaning, and the durability, will be adopted in the coast defense vessel above mentioned, provided that the price, which must be stated when the plans are submitted, is satisfactory to the navy department. Such boilers as appear to possess merit will be tested by the navy department, if the manufacturers so desire, to determine which is the more suitable for the purpose.

Manufacturers who wish their boilers to be tested must furnish a boiler of the type of one of those proposed for the vessel and prepare it for test either at their own works or at such place as may be arranged with the department. The expense of the test of the accepted boiler will be borne by the navy department, and the cost of the fuel used in the test of the second best will also be borne by the navy department. All other tests must be at the expense of the parties offering boilers for competition.

WILLIAM C. WHITNEY,  
Secretary of the Navy.

In reply to this advertisement a number of persons applied for and were furnished with copies of the circular and a blue print showing the space available in the Monterey, among whom was Mr. Miers Coryell. In reply to the circular and the plans a number of designs were submitted for various types of boilers, and one from Messrs. F. C. & A. E. Rowland of New Haven, Conn., for ten Belleville boilers. Mr. Coryell did not submit any bid or plans, but it is to be assumed that he is now and was then the agent for the Belleville boiler that this proposition practically amounted to coming from him. It is interesting to compare the weight of Belleville boilers proposed with those of some of the others. The report of the bureau of steam engineering for 1888 gives the figures as follows, according to the statements of parties making the propositions: Belleville boilers, 141 tons; Ward boilers, 60 tons; Cowles boilers, 53.28 tons.

After these propositions had been submitted to the navy department the various parties who submitted the propositions were invited to name a time when they would be ready to have their boilers tested, but the only ones who replied were Messrs. Cowles, Ward and King and the Hohenstein Manufacturing Company. The fact of the business is, according to the claims of officers of the bureau of steam engineering, the navy department has never had any opportunity to observe the working of the Belleville boilers in this country since the test of the Sheerwater boilers until the completion of those on the North West. The Belleville boiler is an old boiler and very well known, and it is not necessary that well informed engineers should make a study of the boiler to find out what its merits and demerits are. The great thing about it would be to find out how it works in actual practice by having the boilers under observation. It is impossible to understand why Mr. Coryell should object to these Belleville boilers having the most rigid inspection by anybody, and if he desires to introduce them into our own navy he certainly ought to welcome inspection by the experts of the navy department.

It is the opinion that the statement of the REVIEW in the article in question is right to the point, however, when it says that Mr. Coryell does not own the North West, and that the builders and owners of course are at perfect liberty to have anybody examine any part of the machinery. A few people here who know the managers of the Globe Iron Works Company feel certain that they would be glad to have the most careful inspection.

### Lake Freights—Iron Mining Matters.

In the outlook for freights, the heavy sales of Bessemer ore and the probability of a large coal movement, and an active resumption of operations among pig iron manufacturers following a settlement of the coal strike, are the only encouraging features for the vessel interests. It is admitted, however, that grain must also move quite freely if rates are to improve when business again takes on normal conditions. The effect of an early opening of navigation is shown in the St. Mary's Falls canal statements. Nearly a million tons of ore has up to this time been moved from Lake Superior as against about 300,000 tons on the same date a year ago, and in flour, also, there is a very heavy increase over last season's shipments. The movement of grain, coal and lumber is, on the other hand, very much below what it was a year ago.

A resumption of mining operations at the Dunn mine is an indication of the tendency to do something in non-Bessemer ores, now that the Bessemers are practically all sold. The Dunn will be operated by Corrigan McKinnie & Co. of Cleveland, who have made satisfactory arrangements regarding royalty with the fee owners and who are said to have sold 60,000 tons of the ore.

No foundation can be found for the rumor that the Minnesota Iron Company had purchased the lease of the Biwabik mine, Missabe range. Cleveland representatives of the Minnesota company say there is absolutely no truth in the story.

It was reported a short time ago that the owners of the new American Line ship building in Philadelphia, were at this late date considering a change in the plan of the boats with a view adopting tubulous instead of Scotch boilers. A letter of inquiry to Mr. James L. Doran, superintending engineer of the International Navigation Company brings a reply to the effect that such a change "has never for a moment been thought of."

IF YOU SEND \$1 TO THE MARINE REVIEW, 516 PERRY-PAYNE BUILDING, CLEVELAND, O., FOR FOUR STEEL ENGRAVINGS OF U. S. WAR SHIPS, ON HEAVY CARD, AND ARE NOT SATISFIED WITH THEM, WE WILL REFUND THE MONEY.



## Heavy Ore Shipments—Canal Statements.

An important feature of the statements of St. Mary's Falls canal business to June 1, 1894, as furnished by Superintendent Wheeler, is the increase over last year in the movement of iron ore, on account of the canal being open during a large part of April this year. The statements show in freight tonnage an increase on the whole of 441,146 net tons to June 1. Last year the amount of ore moved from Lake Superior to June 1, was only 287,652 net tons, as against 944,967 on this same date this year, or a gain of 657,315 tons. In flour the increase in shipments from the head of the lakes is 816,160 barrels. Decreases in the shipments of leading commodities are: Wheat, eastbound, 3,817,463 bushels; lumber east bound, 33,362,000 feet; coal, west bound, 263,847 net tons.

Comparative statement of commerce, east and west bound, through St. Mary's Falls canal from opening of navigation to June 1, seasons of 1893 and 1894.

## EAST BOUND.

ITEMS.	Designation	To June 1, season of 1893.	To June 1, season of 1894.
Copper.....	Net tons.....	10,235	17,068
Corn.....	Bushels.....	591,509	694,568
Building stone.....	Net tons.....	4,721	2,563
Flour.....	Barrels.....	612,495	1,428,655
Iron ore.....	Net tons.....	287,652	944,967
Iron pig.....	Net tons.....	1,765	4,045
Lumber.....	M. ft. B. M.....	55,484	88,846
Silver ore.....	Net tons.....	.....	372
Wheat.....	Bushels.....	8,618,953	4,801,490
Unclassified freight.....	Net tons.....	14,241	22,054
Passengers.....	Number.....	293	866

## WEST BOUND.

ITEMS.	Designation	To June 1, season of 1893.	To June 1, season of 1894.
Coal, anthracite.....	Net tons.....	.....	79,521
Coal, bituminous.....	Net tons.....	*390,792	47,424
Flour.....	Barrels.....	20	753
Grain.....	Bushels.....	300	500
Manufactured iron.....	Net tons.....	4,210	3,730
Salt.....	Barrels.....	33,393	21,718
Unclassified freight.....	Net tons.....	37,392	44,189
Passengers.....	Number.....	465	834

\* Anthracite and bituminous were not separated in 1893.

	To June 1, 1894.	To June 1, 1893.
East bound freight, net tons.....	1,437,721	737,388
West bound freight, net tons.....	178,325	437,512
Total freight, net tons.....	1,616,046	1,174,900

## Publications of the Hydrographic Office.

In order to place before vessel masters on the lakes any information that may be of advantage to them coming from the hydrographic office, navy department, the MARINE REVIEW has accepted the agency for the sale of publications of that office. As yet the number of charts, books and other publications of value on the lakes coming from the hydrographic office is limited, but as the work of the service increases here it is expected that the publications will increase also.

The branch offices of the service never sell the publications. They circulate those which are given freely and exhibit and explain charts, books and sailing directions of the whole world, but in respect to the sale of those charts which are not circulated freely, they always refer inquirers to the agencies. Although the first issue of the new pilot chart of the lakes has been necessarily circulated to a large extent without charge, it is nevertheless a chart for which the general public will be obliged to pay hereafter excepting in the cases of those who observed the weather for the hydrographic office or otherwise provide it with valuable information. It is the desire of the officers of the service to have a lot of observers of the weather on board the lake vessels, not so much for the purpose of investigating the weather itself as for studying and discussing nautical practice with respect to weather, and for the purpose of getting in touch with the shipping community and keeping there, and on this account many of the publications will be quite generally distributed free of charge, but there are charts, books and other printed matter that are not distributed free and these can be had at the regular prices from the MARINE REVIEW.

WE ARE NOW IN POSITION TO FURNISH BROMIDE CRAYON PORTRAITS OF YOUR BOAT, 14 BY 22 INCHES, FOR \$5 EACH. IT IS NECESSARY TO HAVE A PAINTING OR PHOTOGRAPH OF YOUR BOAT TO WORK FROM. IF YOU HAVE NONE, WE CAN HAVE ONE TAKEN WHEN YOU COME INTO CLEVELAND FOR \$1 EXTRA. AT PRESENT WE CAN FURNISH SUCH BOATS AS THE W. H. GRATWICK, (STEEL), THE NORTH WEST, VIRGINIA, (NIGHT SCENE), THE CITY OF DETROIT, PONTIAC AND MANY OTHERS. WRITE US ABOUT IT. MARINE REVIEW, 516 PERRY-PAYNE BUILDING, CLEVELAND, O.

## Tips From the Man on the Dock.

I wonder if it has occurred to many of the vessel owners or shippers who are figuring on the probability of high or low freight rates this fall that the medium class of wooden boats have not been getting around very rapidly since the season opened, and that the delay in this regard is due largely to the fact that this class of boats have not been very well kept up of late. M. A. Bradley directed attention to this point in a conversation relative to the freight market, a few days ago. The dry docks have for more than a year past done practically nothing in the way of general repairs that are always necessary on the class of tonnage referred to. In prosperous times they are always busy with this kind of work. Mr. Bradley thinks that the result of so many vessels being in poor condition is equal to a full month of idleness with such tonnage. Of course, he is numbered among the bulls in freight matters this season, as he acted on the principle that when there is nothing in the season rates offered on ore, vessel owners should not tie up to contracts. He is with the bulls in the freight market and he declares with emphasis that every furnace owner in the country is simply awaiting a settlement of the trouble with coal and coke workers to begin making pig iron on a heavy scale. His opinion is worth noting. He is among the shrewdest of young men in this part of the country who have fallen into the management of big money interests.

Another man in the iron ore and vessel business in Cleveland, who is not heard of a great deal in the newspapers, but whose opinion in freight matters is always valuable, is Mr. L. C. Hanna, who is the active manager of the shipping, mining and furnace interests of the several corporations controlled by members of the firm of M. A. Hanna & Co. Mr. Hanna's diversified interests give him an opportunity to consider all sides of the iron industry and the transportation business, and to express a fair opinion, as he is both shipper and vessel owner on about an equal basis. "We have had no opportunity within the past two or three years," he says, "to test at any one time the capacity of the lake fleet, so as to know what can be done with a season crowded into a few months, but I am certainly of the opinion that unless we have a large movement of grain we can have no substantial improvement in freights." Mr. Hanna admits the certainty of an active business in ore and coal, but he is inclined to attach larger figures to the capacity of the lake fleet than are some other vessel owners. Then, too, he directs attention to the fact that furnaces will take ore rapidly upon resuming work and that good dispatch will be furnished at Lake Erie docks. He lays considerable stress also on the increase in all cargoes from Lake Superior, due to the greater draft of water at the Sault.

I also had a talk, a day or two ago, with Mr. H. G. Dalton of Pickands, Mather & Co., on this same subject. He is not given to expressing very decided opinions, but might be expected to lean a little towards the shipper's side of the market. He admits improvement in the outlook as regards the iron ore business, but argues that sales of ore have been quite generally covered by lake freight contracts, and that the ore shipper will be very liable to drop out of the market, to the extent of bringing down any unsold ore, in event of competition from grain.

## Directions for Inspection of Iron and Steel Plate.

A circular of recent date from the supervising inspector of steam vessels of the United States to manufacturers of boilers and boiler plates says:

"The inspection of iron and steel plate, under the act of congress approved January 22, 1894, and department circular No. 22, dated Feb. 6, 1894, must be confined exclusively to the inspection of iron and steel to be used in the construction of boilers of steam vessels. Manufacturers of boiler plate will hereafter be required to include in their application for inspection of plate at the mills the following information: Name of steamer, if she has one, upon which the boiler is to be used, for which the plate is ordered, and if the steamer is not yet named, then the name of the builder of hull; for whom built; waters upon which the steamer is to be navigated; United States local inspection district in which she will be inspected; number and thickness of plates for shell, steam chimneys, linings of same, shell of steam and mud drums, and thickness of head and side sheets, domes, crowns of furnaces and back connections. To insure prompt inspection of their material, manufacturers of boilers for steam vessels should supply this information when forwarding their orders to the mills."

Henry Penton, constructing engineer of the Frontier Iron Works, Detroit, is in Toledo and will go to the Atlantic coast with the light-house department vessel just completed by the Craig Ship Building Company. The machinery was constructed at the Frontier works.

A British chart of Lake Superior taking in the entire lake and giving detail regarding the north shore that is not to be found on United States charts, can be had from the Marine Review for \$1.



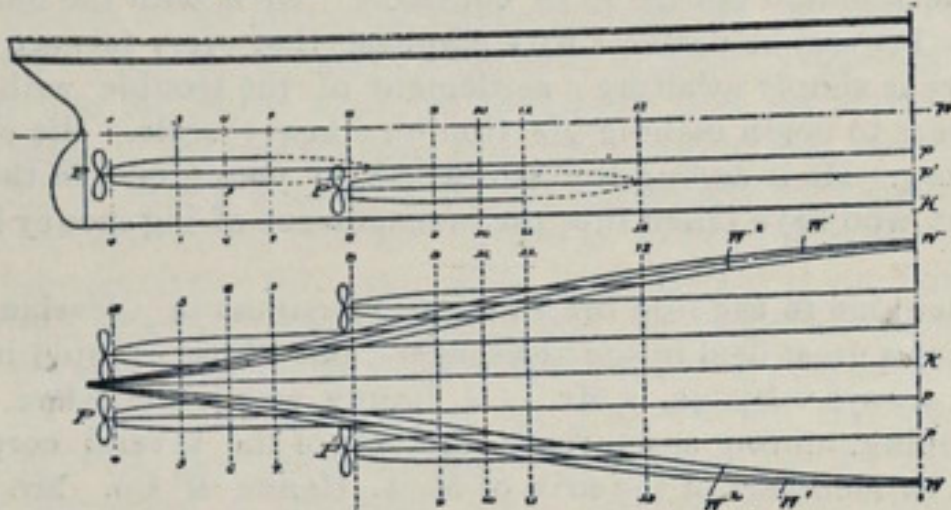
## Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM  
LATEST PATENT OFFICE REPORTS.

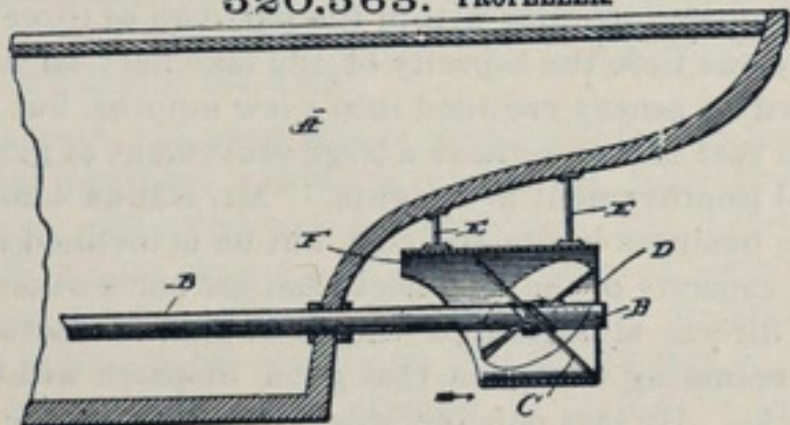
520,691. SCREW PROPELLED VESSEL. Charles G. Lundborg, Philadelphia, Pa. Filed Jan. 6, 1893. Serial No. 457,566. (No model.)

Claim.—First, a vessel hull having its frames or ribs bent to form on each side a plurality of tunnels for propeller shafts, one or more of said frames on each side bent to give form to all the tunnels and all the frames conforming below said tunnels to the lines of lateral contraction toward the stern. Second, a hull for a steam vessel provided on each side between the keel and the water line with a plurality of propeller shafts, and a corresponding number of tubes or tunnels built integral with the hull and having their inner sides open and communicating with the interior of

520,691. SCREW-PROPELLED VESSEL.



520,563. PROPELLER.



the hull. Third, a vessel's hull having at each side of the tapered stern portion a plurality of tunnels for the propeller shafts, said tunnels formed by bending the ribs outward and being in different longitudinal vertical planes, the rear end of one tunnel overlapping the front end of the other, and the rib or ribs at the overlapping points being bent to conform to both tunnels.

520,563. PROPELLER. Owen B. Genty, Vallejo, Cal. Filed Jan. 5, 1894. Serial No. 495,856. (No model.)

Claim.—In a propeller, the combination with a shaft and the blades C, of general semi-circular form connected to and so arranged or disposed on the shaft that each blade will extend approximately at right angles to the other two and their forward and rear ends will rest in the same vertical planes; of the fixed casing or hood D, inclosing the blades and having its forward upper portion extended in advance of its lower portion.

## Notice to Mariners.

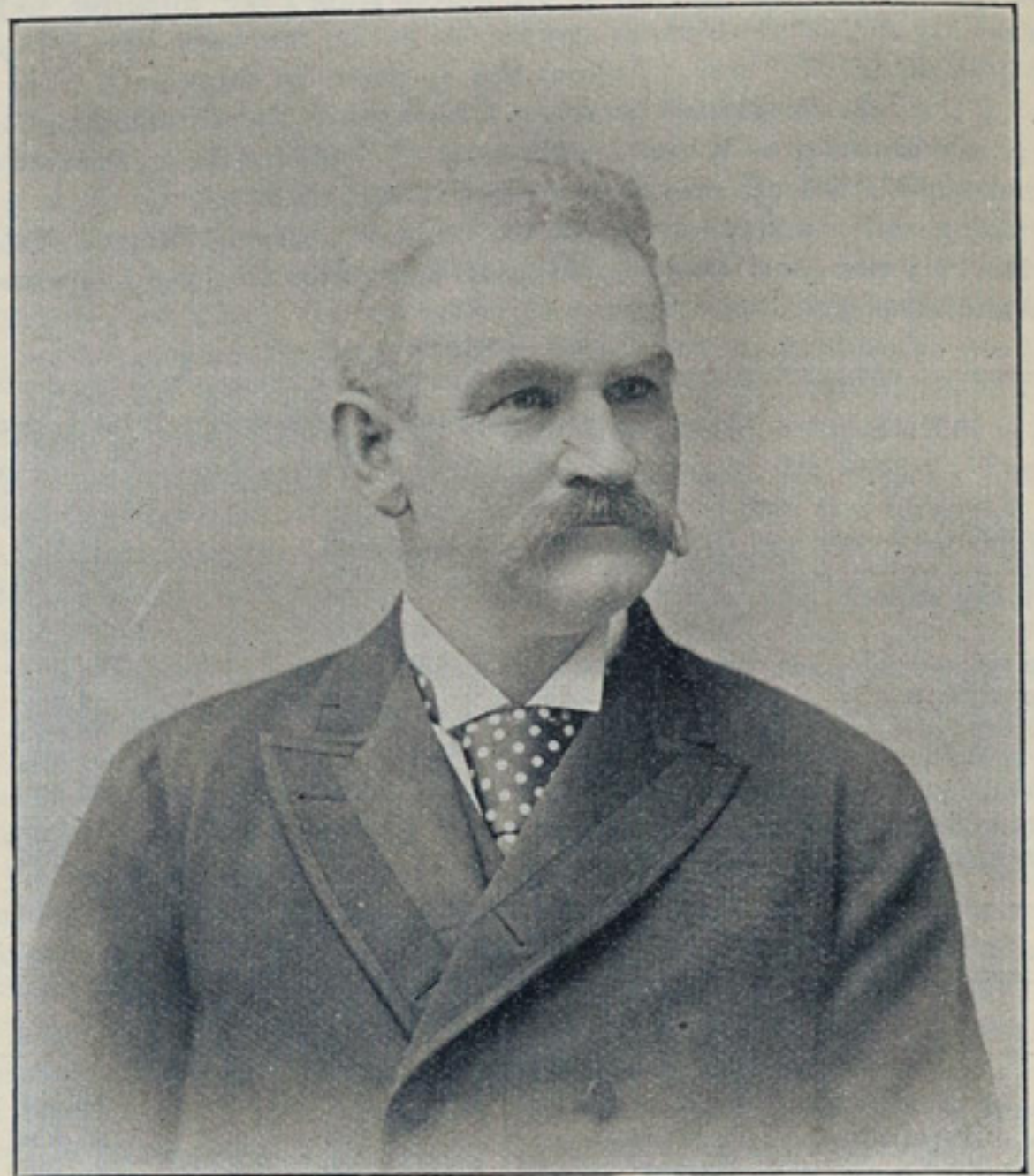
About June 12, St. Joseph pierhead light tower, on the north pier at the entrance to St. Joseph harbor, Lake Michigan, will be moved about 100 feet nearer the outer end of the pier and the light exhibited and fog bell sounded therefrom as heretofore. On the same date St. Joseph pierhead (front) light will be moved about 300 feet to a point on the extension of the north pier, near its outer end, and exhibited from a lantern in an inclosed glazed end of a conduit, extending shoreward 290 feet to the pierhead light tower in its new position. The distance between the lights will then be about 300 feet, and the lights will, as heretofore, form a range for approaching the harbor, the range line approximating the line of direction of the outer end of the north pier. The characteristics of the lights will not be changed.

## Coast Defense Canals.

Our naval policy is one of the leading topics treated editorially in the Review of Reviews for June. In the same connection, projects of ship canal building in relation to seaboard defense are discussed. Based upon the recent trip of the torpedo boat Cushing from Washington to New York, it is argued that conformation of the Atlantic coast is such that a few ship canals—none of which would afford serious engineering difficulties, and the sum total of which could be constructed at a cost that would not be prohibitive—would give a water passage protected almost the entire distance by islands or natural breakwaters from Boston to New Orleans.

## The Late Henry Howard.

A brief note announcing the death of Henry Howard of Port Huron appeared in the last issue of the REVIEW. Mr. Howard was among the best known citizens of the state of Michigan. He was born in the city of Detroit in March, 1833, but had lived in Port Huron from childhood. His



HENRY HOWARD.

father, John Howard, was engaged in the lumber business, and the son entered the same trade shortly after leaving school. His principal vessel interests were in the Howard Towing Association of Port Huron and the Northern Transit Company of Sarnia, Ont. During forty years of active business life in Port Huron he held positions in various branches of the municipal government and was mayor of the town in 1882. He was twice elected to the state legislature and represented the Port Huron district in that body from 1873 to 1876. He was interested in various industrial enterprises in and around Port Huron and was also a director of the Chicago & Grand Trunk Railroad, a member of the board of trustees of the Port Huron Institute and commander of the Knights Templar of the city.

## Officers of the Light-House Service.

As changes among army and navy officers in the light-house service occur quite frequently, it may be of advantage to note the present executive officers of the service in Washington and also the officers in charge of lake districts. The chairman of the board is Rear Admiral James A. Greer, U. S. N., 2010 Hillyer Place, Washington, D. C., and the secretaries are Capt. Robley D. Evans, U. S. N., 324 Indiana avenue, N. W., and Capt. Philip M. Price, corps of engineers, U. S. A., the Richmond, 17th and H streets, both Washington D. C. The inspectors or naval officers, on the lakes are: Ninth district, Lieut. Commander Jas. H. Dayton, U. S. N., room 1308, Chamber of Commerce building, corner Washington and La Salle streets, Chicago, Ill.; tenth district, Commander James G. Green, U. S. N., post office building, Buffalo, N. Y.; eleventh district, Commander William W. Mead, U. S. N., 80 Griswold street, Detroit, Mich. The light-house construction work in two of the three districts on the lakes, the ninth and eleventh, is now in charge of Maj. Milton B. Adams, corps of engineers U. S. A., 18 Bagley street, Detroit, Mich. In the other district, the tenth, the army engineer in charge is Lieut. Col. Jared A. Smith, Hickox building, 185 Euclid avenue, Cleveland, O.

An engineer who does not regard very highly the abilities of daily newspaper writers when dealing with technical subjects, sends us the following gem, which was clipped from the Detroit Free Press: "In a letter to E. L. Kelsey, from Capt. Dix, of the schooner S. H. Dunn, in Welland canal, he says that the engineer of the steamer City of Windsor gave two bells, the signal to back up, but the engine failed to respond. He thinks this is quite a mystery, as the steamer has a fore-and-aft compound engine, which could not stop on the centers. He says that it would hardly seem possible that a boat of the size of the City of Windsor could do so much damage."



### Competition in Ship Building.

In an article containing several elaborate statistical tables showing the proportions of the total trade of different countries carried by the national marine of each country, an editorial writer in the *Iron and Coal Trades Review* of London refers to the probability of the United States being Great Britain's most successful competitor for the ship building business of the world in the future. The article says:

"One great point in favor of English and Scotch ship builders is that they are on the spot, and in constant touch with the shipping firms who have the greatest amount of tonnage to give out. Another is that they have established more or less intimate relations with shipping interests abroad. It is one of the most remarkable facts in the modern history of commerce that this little kingdom of ours has an oversea carrying trade represented by not less than 75,000,000 tons of entrances and clearances annually, whereas the United States has only 35,000,000 tons, or less than half as much as our own; Germany only 24,000,000, or less than one-third that of Great Britain, while France has only some 31,000,000 tons, or considerably under one-half of the yearly tonnage that enters and clears from our own ports.

"Not only does Great Britain do about 70 per cent. of her own carrying trade, but she also does a large slice of the carrying trade of other countries, and notably of the United States, France, Italy, and Holland. The question that naturally arises upon these figures is that of how far the British marine is increasing its hold on the carrying trade as between one period and another. This question is answered for the years 1880 and 1892, by a summary of the shipping returns, which shows that we have improved our position from 70.4 per cent. in 1880 to 71.7 per cent. in 1892 in the shipping business that properly belongs to our own country. When we come to deal with steam shipping alone we find that Great Britain has an enormous preponderance over all the other countries of the world, which is reflected in the fact that whereas we only carry 71.7 per cent. of our own business in tonnage of both kinds, we rise to 78 per cent. of the whole in steam shipping, as such, while the United States drops from 21.4 to 16.9 per cent. We carry in steam nearly five times as much of our own business as is carried by the United States of the steam tonnage used in the commerce of that country, and more than twice what is carried by Germany and France, averaging the two countries.

"But there are some authorities who believe that our most successful competitor in the near future will be the United States. That country has not hitherto been able to compete with our own in the ship building business of the world, partly because of the higher cost of the raw material, partly because of the greater dearth and scarcity of suitable labor, partly because of the greater cost involved in the navigation of American tonnage, and partly because of the restraining provisions of the American navigation laws. All of these influences and many others have no doubt tended to keep back the advance of the American shipping trade. The double taxation—governmental and municipal—of all American industries was also complained of as a serious difficulty. Up to a comparatively recent date it was calculated that the raw materials employed in the construction of an iron or steel ship made up about 60 per cent. of its total cost, but in all modern manufacturing operations the tendency of late years has been to reduce the proportionate cost of materials and to increase that of labor. Mr. Bret Harte, when United States consul at Glasgow, obtained for the report on ship building furnished in the tenth census a statement of the cost of iron ships and of leading ship building materials on the Clyde over a series of years. He found that between 1859 and 1878 the general cost of iron ships per register ton was about £14 5s. to £14 10s. Since then great changes have come about in the economical conditions of iron and steel ship building. It was regarded as a great drop when the price of iron ships fell, as they did in 1882, to about £12 10s. per ton, but during the last two or three years many thousands of tons have been built in Great Britain in steel for an average cost over all of £7 10s. to £8 per ton. This remarkable reduction has been almost wholly due to the lower prices quoted for materials and to improved processes of manipulation. Labor has not become cheaper. On the contrary, the tendency is for British labor to become more and more dissatisfied and despotic. The cry is now for an eight-hour day, and this is demanded without any equivalent concession in the matter of wages. It is a moot point whether British labor has of late years become more efficient. Its efficiency has doubtless increased, in so far as it is affected by the use of labor-saving machinery, but it is not certain that it goes beyond this. At any rate, it will probably be safe to affirm that labor will now represent at least 50 per cent. of the total cost of getting out an ordinary ship; or, in other words, the difference in favor of England due to the cheaper cost of materials is by no means so apparent as it formerly was.

"Another important gain that English ship builders had in the earlier days of iron ship building which they have since failed to maintain is their greater command of capital to embark in large operations. After the American civil war everybody was greatly impoverished, and it took a long period of patient industry to even partially recover. Ship builders accordingly had not the means to construct new work and provide new

plans adapted to the iron ship building business. It was calculated not many years ago that there were in the United States many builders of wooden ships whose total outfit of tools did not exceed \$500 in value, whereas, even a small ship yard could not be established for much less than ten times that amount, and many of the large ship building works in Great Britain have cost well onto a hundred times that sum. The United States has since become a very rich nation—richer by far than even the mother country—so that the question of providing adequate capital is no longer likely to stand in the way if the conditions otherwise are favorable."

### Canada's Atlantic Liners.

Although the contracts for the four large high speed steamers for the Canadian Atlantic service can not be given out until action is taken by the Canadian parliament on the question of subsidy, the specifications for the boats have been sent to British ship builders. Engineering of London says that bids have been sought from only five firms—two on the Clyde, Messrs. Thomson and Fairfield Company, the Barrow Company, Sir W. Armstrong, Mitchell & Co., and Messrs. Swan and Hunter, the latter two Tyne firms. The drawings sent out with the specifications show that the vessels have a strong family likeness to the *Campania* and *Lucania*, which is not surprising, since Mr. R. Saxton White was designer of these also; but the new vessels have several improvements, notably the adoption of four crank quadruple engines, adopted in preference to others because of the recognized absence of vibration. With this exception, the builders have a free hand in the design of machinery, but the speed on the Atlantic over a number of voyages must be 21 knots. The power will be 21,000 indicated horse power, but there is no limit in this direction. Nor is the fuel consumption limited by contract. Of course, the vessels are twin-screw. They are to be 572 feet over all, 62 feet beam, 42 feet deep, moulded; and therefore they come next to the famous Cunarders as to size. The greater depth of water at Halifax and Quebec than at most ports enables the designed load draught to be 30 feet, greater by 2 feet and 3 feet than that of other Atlantic liners. The coal bunkers are to carry 3,000 tons, and the cargo capacity will be 3,500 tons, more than double that of the Cunarders. The number of passengers carried will be nearly as large—300 first, 200 second and 1,000 steerage passengers.

A long hood over the fore part of the steamers will protect the shade deck, which is continuous over the whole length of the vessels, and another departure from existing liners in the design will be that the usual openings at the side of the ships at the upper-deck will be abolished, and the plates be continued solid to the awning-deck. Thus no water can be shipped forward other than on the hood and awning-deck. At the after-part of the upper-deck large iron doors or windows will be fitted to give light and air without interfering with the structural strength of the steamers. It is as yet undecided whether the ships will run to Southampton, Milford Haven or Liverpool on the other side. All three places are bidding for the business.

### Proposed Harbor of Refuge at Racine.

EDITOR MARINE REVIEW:—Again we have had a very convincing illustration of the great benefit that would be derived from a breakwater off Racine, north point, or Wind point, so called. If we had such protection during the recent severe northeaster, there would have been no such sacrifice of life and property as was witnessed at Chicago. A breakwater extending a half mile in a south-easterly direction from the light house, beginning about half a mile from shore, would afford a harbor of refuge for the largest boats, where the best of anchorage could be had with room enough to accommodate a large fleet. I ask you, through your valuable paper, to call the attention of the proper authorities to the great importance of having a place of refuge of this kind in time of storm. The plan I think will commend itself to the majority of our marine men.

G. D. FELLOWS,

RACINE, WIS., June 5, 1894.

### Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on June 2, 1894:

	Wheat, bu.	Corn, bu.
Chicago.....	19,356,000	3,178,000
Duluth.....	7,945,000	48,000
Milwaukee.....	1,107,000	3,000
Detroit.....	1,736,000	19,000
Toledo.....	2,617,000	18,000
Buffalo.....	1,746,000	331,000
Total.....	34,507,000	3,597,000

At the points named there is a net decrease for the week of 888,000 bushels of wheat and 307,000 bushels of corn.

"ROPER'S LAND AND MARINE ENGINES," BOUND IN MOROCCO WITH FLAP AND POCKET, WILL BE MAILED TO ANY ADDRESS FOR \$3.50 SENT TO THE MARINE REVIEW, CLEVELAND, O.



# MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

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The books of the United States treasury department contain the names of 3,761 vessels, of 1,261,067.22 gross tons register in the lake trade. The lakes have more steam vessels of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of steam vessels of 1,000 to 2,500 tons on the lakes on June 30, 1893, was 318 and their aggregate gross tonnage 525,778.57; in all other parts of the country the number of this class of vessels was, on the same date, 211 and their gross tonnage 314,016.65. The classification of the entire lake fleet on June 30, 1893, was as follows:

Class.	Number.	Gross Tonnage.
Steam vessels .....	1,731	828,702.29
Sailing vessels.....	1,205	317,789.37
Canal boats.....	743	76,843.57
Barges.....	82	37,731.99
Total.....	3,761	1,261,067.22

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	Number.	Net Tonnage.
1889.....	225	107,080.30
1890.....	218	108,515.00
1891.....	204	111,856.45
1892.....	169	45,168.98
1893.....	175	99,271.24
Total.....	991	471,891.97

## ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

	St. Mary's Falls Canal.			Suez Canal.		
	1893.	1892.	1891.	1893.	1892.	1891.
No. vessel passages	12,008	12,580	10,191	3,341	3,559	4,207
Ton'ge, net regist'd	9,849,754	10,647,203	8,400,685	7,659,068	7,712,028	8,698,777
Days of navigation..	219	223	225	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

IN A CONTROVERSY with the newly appointed commissioner of navigation on the subject of free ships, Mr. W. I. Babcock, general manager of the Chicago Ship Building Company, has surprised his friends by his able manner of writing and by the thorough knowledge which he shows of matters pertaining to American shipping. A lengthy letter in the New York Sun of recent date is especially forcible. But we fail to see any advantage in the action of one of the New York marine publications that criticises Mr. Chamberlain's work in other matters that rightly pertain to his office and refers to him sarcastically as the "ambitious young commissioner," because of the stand he has taken in support of the people who have placed him in office. The collection and publication of valuable information and statistical matter of the kind that has been given out from the office of the commissioner of navigation since Mr. Chamberlain took charge should meet with warm encouragement from marine journals. If the commissioner sees fit to air his opinions regarding the political side of the shipping question, as many of his predecessors have done, he will undoubtedly meet with a warm reception from able advocates on the other side.

FOLLOWING a settlement of the strikes among coal and coke workers there is absolute certainty of a general resumption of business in all manufacturing lines, as stocks are cleared up everywhere. This is especially true of the iron business. Furnace men are all ready to begin making Bessemer pig on a very large scale as soon as the fuel can be secured. Values will not be greatly increased, and no boom is expected, but everybody in the iron business looks for quite a large volume of trade. It is on this account that most vessel owners look for fairly profitable carrying rates later on if there is any movement of grain.

A SHORT TIME AGO certain American vessel owners on the lakes objected to Canadian vessels carrying from Duluth to St. Lawrence river ports in Canada grain that was afterward exported via American ports. Now objection is raised at Port Arthur, at least in newspaper dispatches, against American boats being allowed to carry Canadian grain to Ogdensburg for trans-shipment back into Canada and export via Montreal. The Canadian government has, of course, paid no attention to the matter, as there is no violation of the coasting laws in either case.

It is not probable that there is any truth in the statement that, as a result of a visit made to Central America by Capt. John G. Keith of Chicago, the American Steel Barge Company will send four steamboats of the whale-back type from the lakes to the Atlantic to engage in trade between Central American ports and New Orleans. The barge company has not enough steamers now to handle its tow barges on the lakes, and will undoubtedly build two or three more steamers next winter for this purpose if there is any improvement in lake business.

LON MERRITT'S rise and downfall is made the subject of a great tale of finances in a recent issue of the Minneapolis Journal. It is a story about the Missabe range, the Merritts, millions of money and John D. Rockefeller, written by S. A. Phillips of Duluth, who claims to have inside information about all that has happened since the range was discovered. Of course, John D. Rockefeller is painted in very dark colors but there is no telling how much of the yarn is fiction.

THE Detroit Journal is to be commended for its enterprise in publishing a complete marine report this season, as against a very poor telegraphic service in the other Detroit dailies. Although not a morning publication, the Journal has been publishing exclusively in Detroit a full morning report in its early editions and an afternoon report in the later editions. Local and general news matters of a marine nature are also well covered.

AT LEAST ONE of the Democratic congressmen from Michigan, Representative Weadock of Bay City, will be found opposing the Fithian free ship bill, if that measure ever comes up for consideration. Mr. Weadock worked hard for a duty on iron ore before the Wilson tariff bill went to the senate. He will have better support from representatives of lake districts in opposing the Fithian bill.

WITH A TOTAL expenditure of less than \$3,000,000 the great Hay lake channel is now open for navigation. The cost is not as low as that of the other parts of the 20-foot channel system, in which full advantage was taken of continuous contracts, but there is no doubt of a great saving in the Hay lake work in as far as the contract system applied to it.

## Freight Rates, Lake Shore Railway and Great Lakes.

In connection with a chart showing both the average rate and cost per ton per mile of carrying freight over the Lake Shore & Michigan Southern Railway, Mr. C. P. Leland, auditor of the Lake Shore company, has prepared a number of tables giving statistics for a long period of years regarding the mineral production of the United States, output of iron ore from Lake Superior mines, receipts of ore at Lake Erie ports, pig iron production of leading countries, totals of crops raised in the United States, etc. As the title to the sheet indicates, the statistics are "grouped for quick reference by busy men," and the sources from which the information is taken are in all cases known to be entirely reliable.

To anyone who has noted the great reduction in freight rates on the lakes, the chart showing the Lake Shore company's rates and cost per ton per mile prompts some comparisons. The chart shows that in forty years the per cent. of decline in the railway rate has been 83.28, but within the past ten or twelve years the reduction has been comparatively unimportant, as the average freight rate per ton per mile on the Lake Shore in 1881 was 6.17 mills and the cost 4.14 mills, against a rate of 5.87 mills and a cost of 4.61 mills in 1893. Now let us compare the rate and cost per ton per mile on the Lake Shore road, which carries freight at about as low a cost as any of the trunk lines of the country, with the lake rate as reported by Gen. Poe, corps of engineers, U. S. A., in charge of St. Mary's Falls canal. The comparison can only be made for seven years past, as the lake rates are available for that period only.

TABLE COMPARING AVERAGE FREIGHT RATE AND COST PER TON PER MILE OVER LAKE SHORE & MICHIGAN SOUTHERN RAILWAY WITH AVERAGE LAKE RATE PER TON PER MILE DURING SEVEN YEARS PAST.

YEAR.	GREAT LAKES, Average Rate.	L. S. & M. S. Ry. Average Rate.	L. S. & M. S. Ry. Average Cost.
	Mills.	Mills.	Mills.
1887	2.30	6.70	4.18
1888	1.50	6.36	4.30
1889	1.50	6.64	4.79
1890	1.30	6.26	4.58
1891	1.35	6.28	4.56
1892	1.31	5.99	4.36
1893	1.10	5.87	4.61

The lake rate is arrived at by dividing the total of carrying charges by the total mile tons.

Subscribers will avoid danger of mistakes by giving the old as well as the new address when a change is desired.



### A Civil Engineer Writes of Lake Harbor Work.

George Y. Wisner, civil engineer of Detroit, has an article in the June number of the Engineering Magazine on "Breakwaters, Sea Walls and Jetties." Mr. Wisner has had a great deal of experience with engineering works of the kind designated by the subject of his article, and he writes interestingly of designs and material used by other countries. As might be expected, he does not let the opportunity pass without criticising our army engineers, whose methods he has opposed for some time past. In the introductory part of the article, treating of the commercial importance of river and harbor improvements, the author says:

"The improvement of harbors in the United States extends only over a period of about ninety years, during which time upwards of \$250,000,000 have been expended by the general government for such purposes. About \$40,000,000 of this has been used for improving the harbors and waterways of the great lakes, where the system of jetties and breakwaters for improving harbors is perhaps more general than on any other coast in the world. The average extent that the lake harbors and connecting waterways have been deepened is approximately 8 feet, at an average cost of \$5,000,000 for each foot gained in depth. This may seem somewhat expensive, but when the cost is considered in connection with the benefits derived, it is a mere bagatelle. Prior to 1871, the ruling depth of lake ports and connecting channels in the United States was about 11 feet, which was then increased to 13 feet. In 1873 the depth was increased to 16 feet. The freight rate on grain from Chicago to Buffalo, before the channels were deepened, averaged about 8 cents per bushel, but the rate has since decreased to less than 2 cents. The grain delivered at Buffalo in 1892 amounted to 182,000,000 bushels, on which the cost of transportation was \$11,000,000 less than it would have been with the freight rates prevailing before the channels were deepened. Since the grain freight amounts only to about one-fourth of that affected by the cheaper rates, it is evident that the amount saved to producers in a single year is nearly as much as the entire improvements of lake channels and harbors have cost. The rapid growth of American commerce, the vast coast line to be improved, and the limited funds to be had for such purpose created a demand for immediate results at small expense, which in many instances has necessitated the construction of works of a temporary character. The replacing of such works with permanent structures, which will at the same time increase the harbor facilities, are problems well worthy of careful consideration.

"The general system of breakwater construction on the lake coasts has been that of timber cribs filled with stone. In the lake climate the average life of timber above water is about eleven years, and with the low cost of lumber during the early years of harbor improvement, renewals of superstructures could be made for an amount less than the interest on the investment needed for permanent structures. The increase in the cost of lumber has so changed this ratio that it will be more economical in the future to make use of more lasting material for construction purposes. These structures below water-level are generally in good condition for making foundations for permanent concrete superstructures, the sections of which should be so designed that wave-shock will be a minimum. The only serious failure of such works which has occurred recently was that at Buffalo harbor, last year, where a new structure costing upwards of \$100,000 was washed away in a single storm. In this case, however, the government engineers refuse to give any information as to the character of the construction or the cause of the failure, which would indicate that it was due to faulty engineering."

### Supremacy of the Gun.

Speaking of the failure of the 18-inch Harveyized armor plate at Indian Head recently, Charles H. Camp said:

"The most important fact of all is overlooked or not understood by the general public. All armored construction proceeds upon the admitted supremacy of the gun. No one conversant with the situation expects armor to be invulnerable. Naval architects do not pretend to make an impenetrable ship. They only try to do their best within fixed limits of the carrying capacity of the ship. The gun always has the advantage. But the gun can never have so much the advantage when afloat as it has at the testing ground. Hence I say that even if all the other plates should pass and the one under consideration should prove to have been the poorest of the lot, the logic of what I have said will remain good. Or if the others should prove no better than this one, and the Indiana had them on her sides she would still be the best armored ship in the world."

### Favors Internally Fired Boilers.

As bearing upon the question of comparative economy of externally and internally fired boilers, ex-Chief Engineer Sherwood, of the United States navy, has lately gone on record as favoring the internally fired boiler for economy. "Take the ordinary boiler," he says, "and you set it in brick-work. You have a brick furnace. You will never get the same economic evaporation from it as with a shell boiler, that is, the Scotch form of boiler, for the simple reason that there will percolate through the

brick-work setting a certain quantity of air (very much larger than one would suspect), and that reduces the economy of the evaporation. In the early days of my practice as an engineer, I was confronted with the fact that all the boilers set in brick masonry gave a lower economic evaporation than those not so set. In other words, that the interior-fired boiler gave a higher evaporation than the exterior-fired boiler. I made quite a table of the results from all the boilers of the two types that I could obtain. A very great many of those experiments were made by me, and taking the mean of them, I found that they approached the 10 per cent. very closely. I did not at that time know the reason. I thought it was something in the type of the boiler. But really I could not reconcile it. I had the same grate surface, heating surface and combustion of coal in both cases. I could not see why this difference should be for a long while. But the difference was there as a practical fact, and it was caused, as I afterward ascertained, by what I have stated—the in-leakage of air into the gases of combustion, cooling them and requiring more expenditure of heat to expel them from the chimney."

### In General.

J. Parke Channing has resigned his position as assistant general manager of the Calumet and Hecla Mining Company, and the office has been abolished.

Corrigan, McKinnie & Co. of Cleveland have leased the old river furnace, Cleveland, which has been idle for a long time past, and will begin making pig iron as soon as the plant can be prepared for operation.

A neat and novel penwiper, containing pictures of the Massachusetts and a direct-connected engine and dynamo for marine lighting, is the latest advertisement gotten out by the General Electric Company.

A Chicago report says that nine of the twelve general agencies representing marine insurance companies on the lakes have united in employing Capt. J. C. Orr to look after their interests at Buffalo in adjusting losses on grain cargoes.

Even the new Canadian Sault canal will be closed Sundays with all other canals of the dominion between 6 a. m. and 5 p. m. In case of urgent necessity, the law may be suspended by order in council, but not for a term of more than four weeks.

Two new vessels for the Italian navy are to have engines of 26,000 horse power. The British navy has the Blenheim, with about 21,000 horse power, and two vessels under way in Scotland are planned for 25,000 horse power. The chief motive for such enormous energy is probably the efficiency of vessels so supplied for ramming.

Hard coal has been tried quite generally on the largest of the lake steamers during the past two weeks, and with a head wind affording good draft it has worked quite satisfactorily in the ordinary furnaces. In the passenger steamer North West, with tubulous boilers and a surplus of steam power, there will be no disadvantage in using anthracite, and it may be adopted altogether on account of cleanliness.

In a letter to John W. Warner of Warner & Co., Cleveland, Capt. John V. Tuttle, commercial broker and insurance agent of Milwaukee, tells of the good fortune that has fallen to Capt. William R. Williams, formerly of the schooner Joseph Paige. Arrayed in a broadcloth uniform, gilt buttons and navy cap, Capt. Williams on Sunday last bid his friends in Milwaukee adieu and started for Yellowstone National Park, where he will command the steel passenger steamer Zellah on Yellowstone lake. This steamer is owned by the syndicate that has all privileges in Yellowstone National Park, and is really a part of the Northern Pacific Railway system for tourist travel. The captain's expenses are paid out and back home and he is insured a season of pleasant employment in one of the most famous pleasure resorts on the continent.

The oldest steamboat company in the world, organized in 1818, is still in existence, and runs boats on the Ohio river between Cincinnati, Louisville and St. Louis, under the title of the United States Mail Line. This concern built the first steamer designed exclusively for passengers. She was named the General Pike. It took her thirty-one hours to make her trips between Louisville and Cincinnati, a trip that is made at the present time in nine hours. In 1823 there were public rejoicings at Louisville, when a steamboat arrived there in fifteen days and six hours from New Orleans. The captain answering a complimentary toast, gravely stated the upward passage might possibly be accomplished in fifteen days, or six hours less than the time he had just made. Within twenty years the passage was performed in a few hours over four days, and at the present time the distance, 1,480 miles, can be made by the fast packets in a little over three days.—Rochester Herald.

ST. MARY'S RIVER CHARTS NOS. 1 AND 2, FROM POINT IROQUOIS TO E. NEEBISH AND FROM MUD LAKE ENTRANCE TO E. NEEBISH, CORRECTED TO AUG. 30, 1892, CAN BE HAD AT THE OFFICE OF THE MARINE REVIEW, 516 PERRY-PAYNE BUILDING, CLEVELAND, FOR 20 CENTS EACH, OR BOTH BY MAIL FOR 50 CENTS. BOTH CHARTS WILL BE FURNISHED WITH CLOTH BACKS AND BOUND EDGES FOR \$1.50.



### Clamorous for an Object Lesson.

Naval designers and contractors have been clamorous for years for an object lesson, wishing a practical test of the qualities of the modern warship in actual warfare. Naval construction has been completely revolutionized since the last sea fight. The battle ship of today has never been tested in actual combat. Nobody knows how it will meet the test. All judgment of the efficiency and performance of the modern naval equipment of defensive armor and high power guns, torpedoes, rams, magazine and rapid-fire guns, to say nothing of the new and strange devices like dynamite guns and sub-marine torpedo boats, is purely theoretical. The first actual battle may demonstrate the uselessness of means of offense and defense most relied upon, and upset theories of naval construction and warfare as completely as did the fighting of the Monitor and Merrimac. The naval powers that have hundreds of millions of dollars invested in battle ships and cruisers, torpedo boats, gunboats, armor and ordnance, want to know whether they are on the right tack, and nothing but actual war will show them. The limited, but still useful, object lesson afforded in the harbor of Rio Janeiro confirmed the demonstration of the bombardment of Alexandria, that modern high power guns are no more effective against intrenchments than the old kind, and that battle ships can do little harm to moderately well built and defended forts. This was proved in the Chilean war, too, which also showed the effectiveness of torpedoes against ironclads.—Army and Navy Journal.

### Around the Lakes.

Tonnage of the schooner Biwabik, new consort of the steamer Gogebic, is 1,401.78 tons gross and 1,332.25 net; official number, 3,625.

Congressman W. J. White and Mr. Henry A. Hawgood, both vessel owners of Cleveland have gone to Europe. Mr. Hawgood will be away for six or eight weeks.

On her summer excursion business between Chicago and Milwaukee it is intended to have the whaleback passenger steamer Christopher Columbus make two trips a week—Thursdays and Sundays.

A board of officers of the corps of engineers, U. S. A., to consist of of Cols. Henry L. Abbot, Cyrus B. Comstock, and Capt. Dan C. Kingman, has been ordered to assemble at Buffalo to consider and report upon the proposed docks at Squaw island, Niagara river.

Capt. Nelson Little of Port Huron says the late Henry Howard did not have a mortgage on his farm or city property as security for an unpaid balance on the wrecked schooner Shupe. The notes which Mr. Howard so kindly returned to Capt. Little after the wreck of the Shupe were secured by the vessel.

Thursday night, last week, the tug Champion lost part of a raft, about 500 elm logs, stamped with the letter A, off Middle Island, Lake Erie. Anspach Bros., Oak Harbor, O., the owners, offer a reward for information, or they will pay for their delivery at Port Clinton, O. The logs were valued at \$500.

Officials of the Pittsburgh, Shenango & Lake Erie Railway company and the dock company at Conneaut, O., seem to be still working on the scheme for ferrying loaded cars of coal across Lake Erie to Port Dover, Ont. They are seeking assistance from the Canadian government in providing a suitable depth of water in Port Dover harbor.

The new steamer, the hull of which was completed at Gibraltar a few days ago, has been sold to the Shores Lumber Company of Chicago, the consideration being \$68,000. The steambarge George W. Johnson is taken as part payment by the sellers. The new boat was to have been named Wolverine State; but she will now be called Adella Shores. A break in the boat's stern post was the only damage caused by the accident in launching. The steamer is now in Detroit getting her machinery at the works of S. F. Hodge & Co.

Here are a few sample cargoes of ore taken out of Two Harbors, last week, on the Sault canal draft of about 15 feet: Yuma, 3,024 gross tons, Maritana 2,989, Mariposa 2,949, Sagamore 2,837, Pathfinder 2,678, Pontiac 2,494, Kirby 2,383, Samuel Mitchell 2,327. The steamer Alva of the Bradley line, Capt. Holmes delivered 3,511 gross tons of ore at Ashtabula, Monday, from Escanaba. She was drawing 16 feet 3 inches. The steamer Merida of the Whitney fleet, Detroit, loaded at Ashland, Tuesday, a cargo of ore that would weigh 3,620 net tons.

July 4 is the day set for the launch at Philadelphia of the American Line steamer St. Louis, while the St. Paul will be launched two months later. The proportion of length to beam in these steamers is 8.5 to 1; in the Paris it is 8.36, in the Campania 9.23, and in the Teutonic 9.82, the latter being the long narrow model characteristic of the Harland design. In internal arrangements characteristic features of the New York are to be maintained, although the details differ. When the four vessels are on the service—the Paris, New York, St. Louis and St. Paul—then the contest between Southampton and Queenstown will be entered upon in earnest. Hitherto it has been a one-sided contest.

### Trade Notes.

William Rogers of Bath, Me., will build a four-masted schooner of about 900 tons for J. S. Winslow & Co. of Portland, Me.

The Gas Engine and Power Company of Morris Heights on the Harlem is building a 63-foot twin-screw naphtha launch for Charles Fleischman.

Crawford & Fehrenbatch is the name of a new firm, of which John Fehrenbatch, late supervising inspector of steam vessels at Cincinnati, is a member.

J. S. Winslow & Co. of Portland, Me., have just closed a contract with the Hon. William Rogers of Bath, Me., for a four-masted wooden schooner of about 1,000 tons register.

Part of the foundry plant of the Worthington pump works at Elizabethport, N. J., was burned recently, with an estimated loss of \$100,000, but repairs will be made hurriedly, so as to cause little delay in work which the company has under way.

E. M. Brown, representing the Scott Electrical Manufacturing Company of No. 26 Liberty street, New York, is visiting lake cities with a view to introducing an oil search light, which is an adaptation of the Scott company's well known Huntington electric search light, substituting oil for electricity. This oil light is especially suited to yachts and pleasure boats having many landings to make in rivers, as it can be sold for about \$100, and the cost of maintenance is nominal.

See & Jaques, engineers and naval architects, No. 1 Broadway, New York, is the heading to a circular letter received a few days ago, in which Capt. W. H. Jaques, formerly with the Bethlehem Iron Company, announces that he is now associated with Mr. Horace See and others and will engage in general engineering work and consultation in connection with the manufacture and treatment of guns, armor, shafting and other war material, the machinery required for their production, and especially with the fluid compression and hydraulic forging of steel and the best types of armor.

Horace See of No. 1 Broadway, New York, sends out a list of sixty-five sea-going steamships, vessels of war and steam yachts, to which his hydro-pneumatic ash ejector was fitted up to May 1, 1894. Mr. See has also issued some interesting circulars regarding the Yarrow water tube boiler, for which he is agent in this country. The circulars include extracts from papers regarding the boiler, which were read at the last annual meeting of the British Institute of Naval Architects, and also reports of the trials of the torpedo boat chaser Hornet, which was fitted with the Yarrow boiler and which attained a speed of 28 knots.

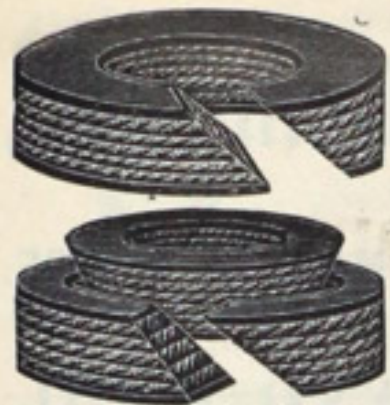
### The Yarrow Boiler.

At the last annual meeting of the British Institute of Naval Architects, Mr. Yarrow, whose tubulous boiler has attracted so much attention in Great Britain, spoke of the results obtained with one of the boilers of the torpedo boat chaser Hornet. It weighed complete, with fittings smoke-box, fire-doors, firebricks, funnel, casings, and all boiler mountings, also including water up to working level, 5 tons, 7 cwt. On carefully conducted experiments in the yard it was found that 12,500 pounds of water were evaporated per hour from 60 degrees Fahrenheit to 180 pounds pressure. In order to compare the relative efficiency of water tube boilers with locomotive boilers, there were the following facts: In the Havock his firm had placed two locomotive boilers, and the machinery indicated on trial about 3,500 horse power, with an air pressure of 3 inches. In the Hornet, a sister ship, provided with similar engines and fitted with eight water tube boilers, they obtained, with a very low air pressure, averaging 1 1/4 inch, 4,300 horse power. The eight boilers in the Hornet weighed 11 tons less than the locomotive boilers in the Havock.

Grain receipts at Buffalo during May were nearly 7,000,000 bushels less than a year ago, but the receipts of flour were over 600,000 barrels in excess of those of May, 1893. Shipments of anthracite coal from the same port for the month of May, 1893, were 363,435 tons; during the month just ended the amount shipped was only 230,747 tons—a falling off of 132,688 tons. The Erie canal, however, is credited with a remarkable business in spite of low rates. During May 6,808,746 bushels of grain were taken to tide water and intermediate points, against 5,505,041 bushels in the same month a year ago.

**TREASURY DEPARTMENT, U. S. LIFE-SAVING SERVICE, Washington, D. C., May 31, 1894.** Sealed proposals will be received at this office until 2 o'clock p. m. of Wednesday, June 13, 1894, for the construction of ten life-boats (English model), four to be delivered in New York city, and six in Grand Haven, Mich. Bids will be received for one or more of the boats but bidders must state the time when they will agree to deliver the boats. Forms of proposals together with plans and specifications can be obtained upon application to this office, to the Inspector Life-Saving Stations, 24 State street New York city, or to the Assistant Inspector 11th Life-Saving District Custom House, Chicago, Ill. S. I. KIMBALL, General Superintendent.





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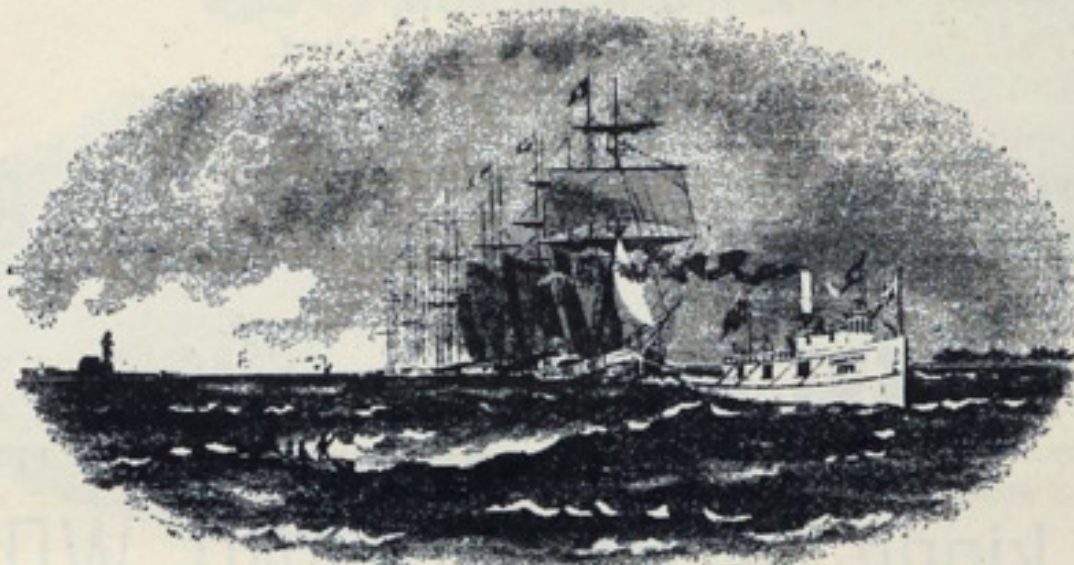
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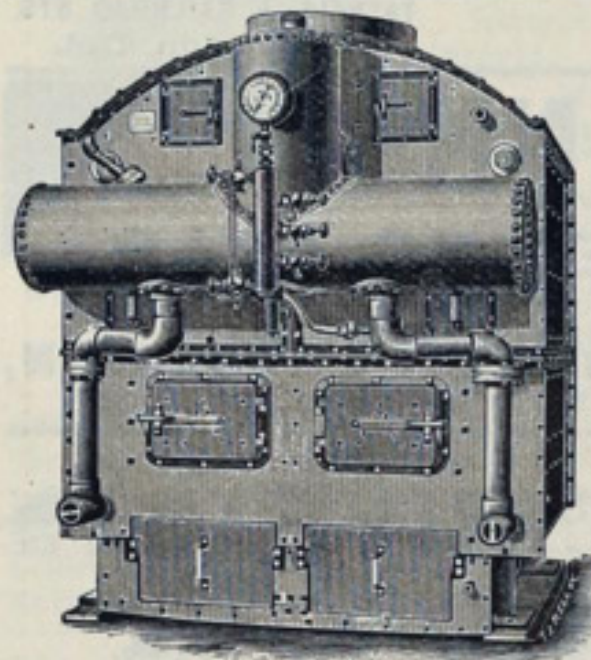


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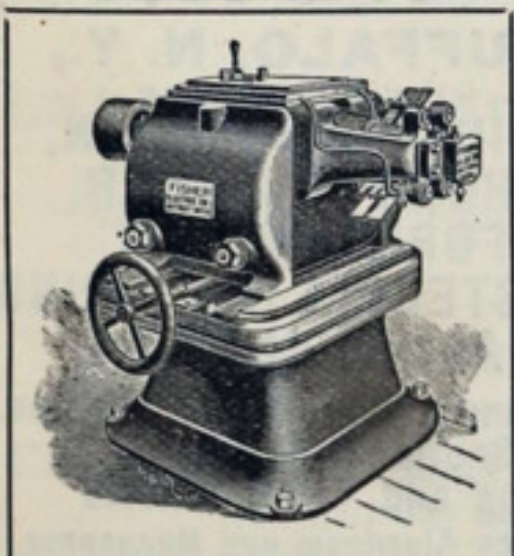
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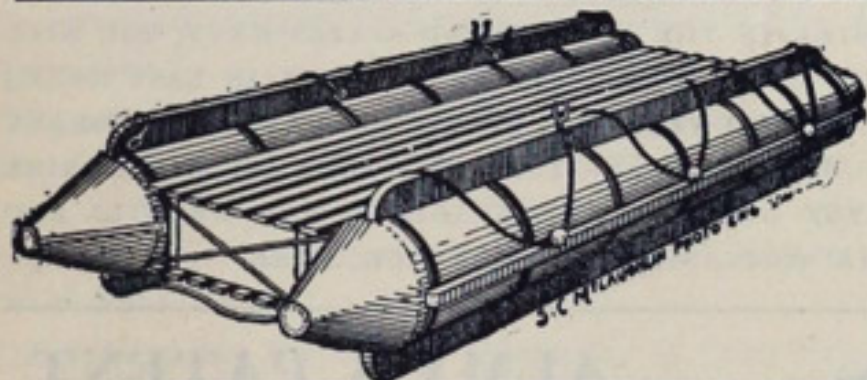
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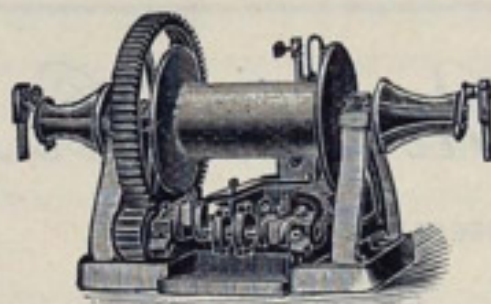
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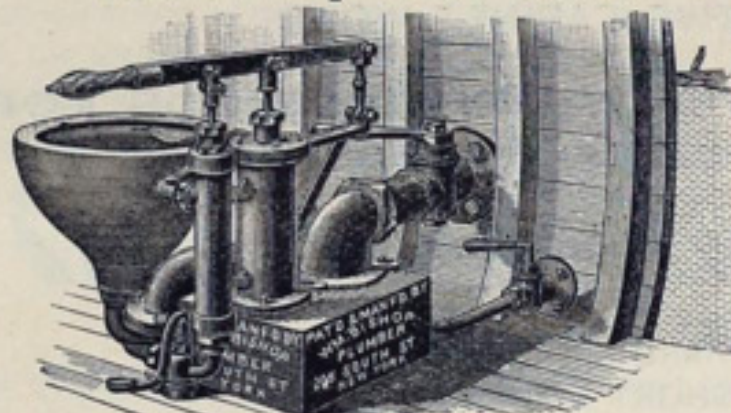
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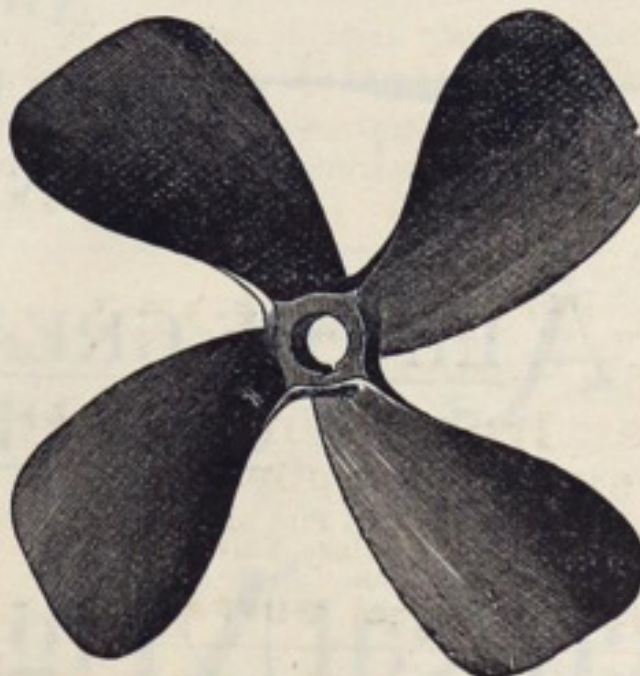
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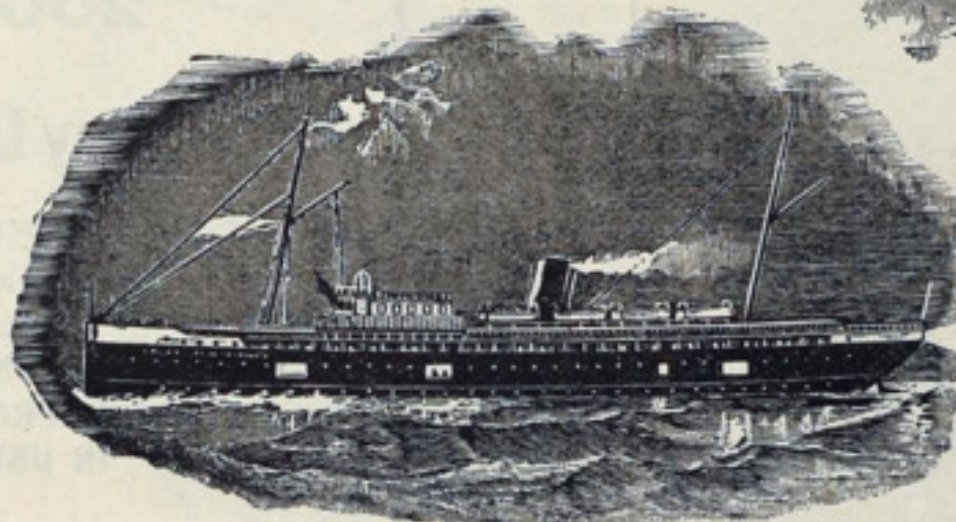
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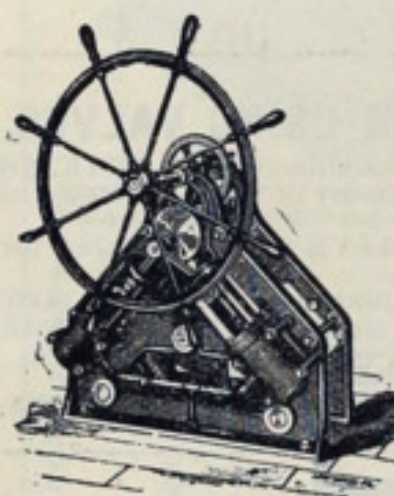
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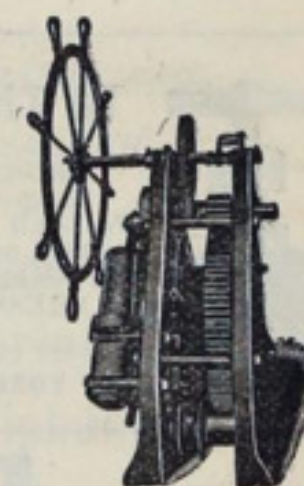
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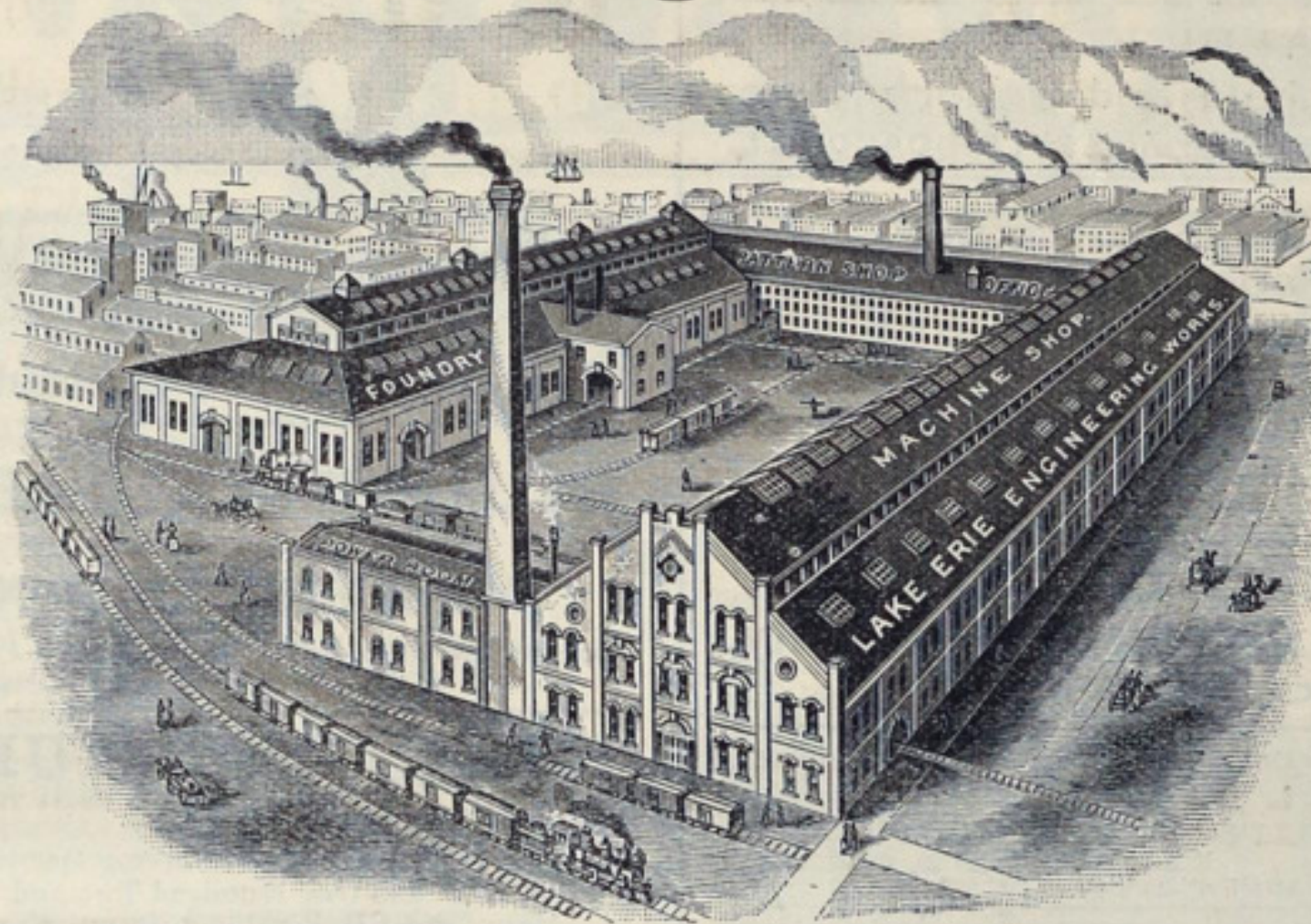


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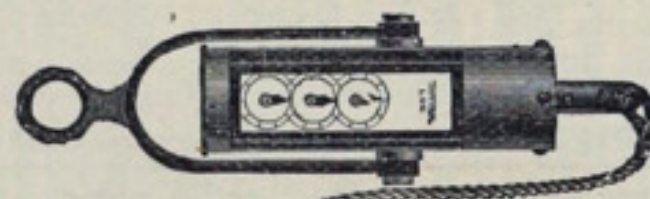
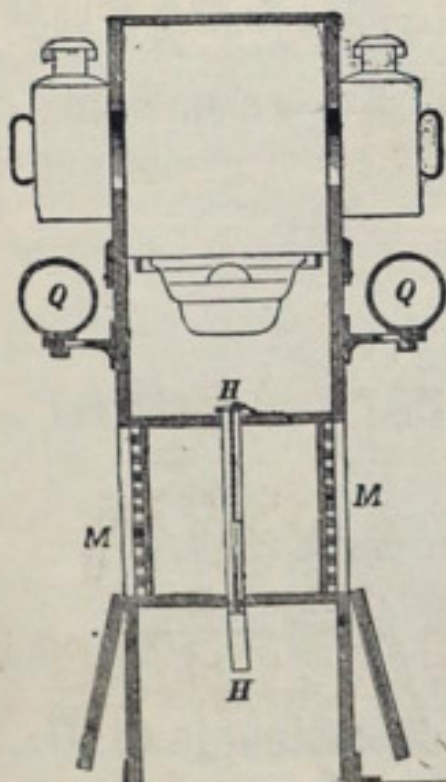
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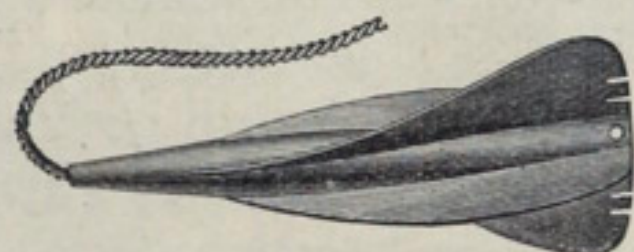
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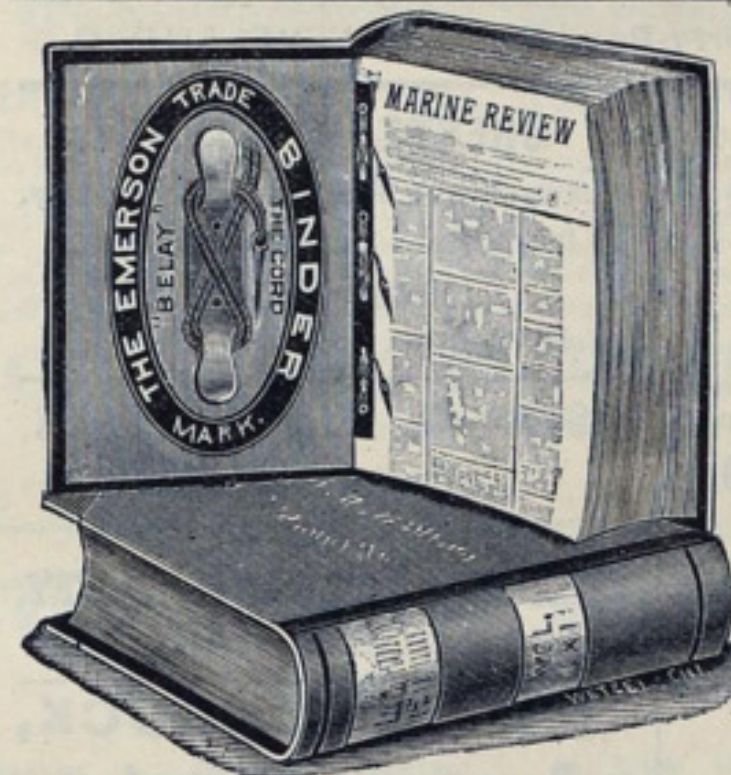


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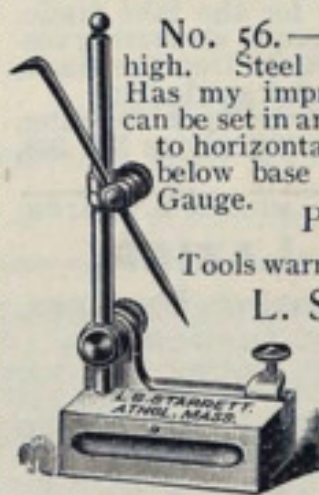
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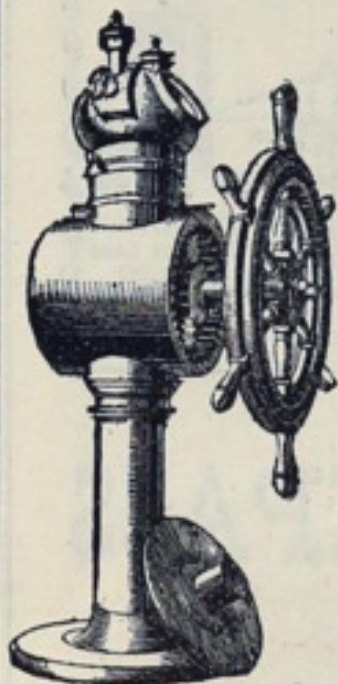
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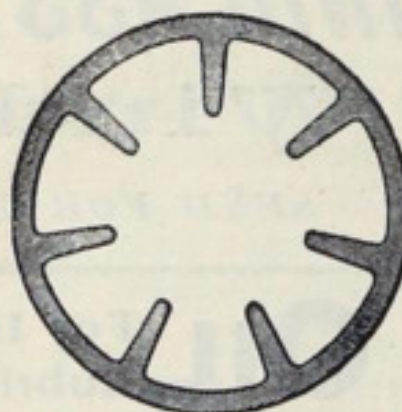
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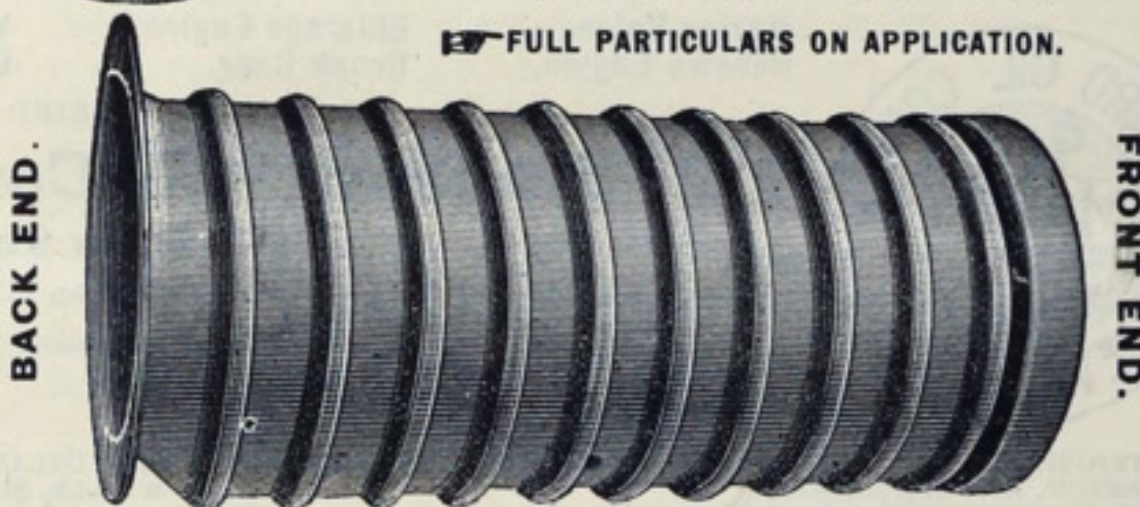
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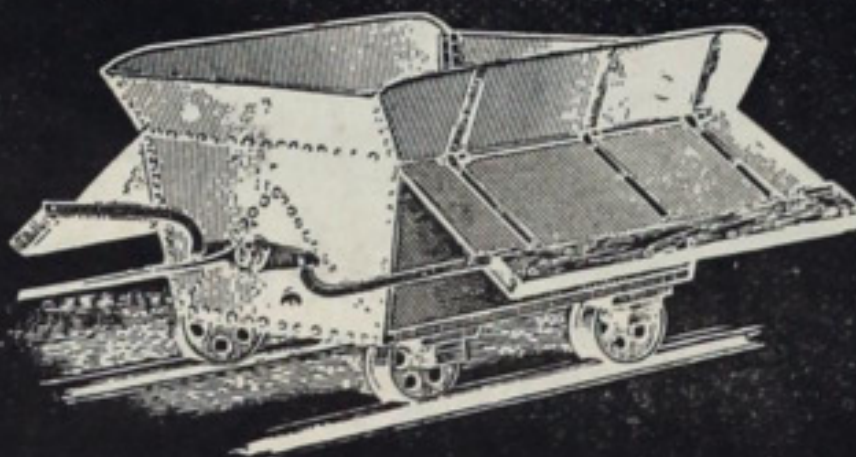
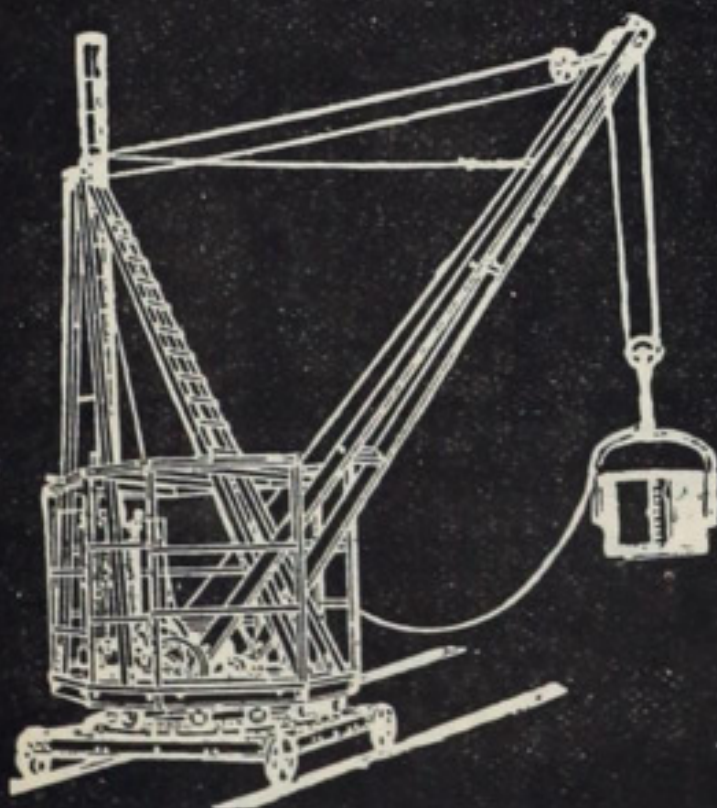
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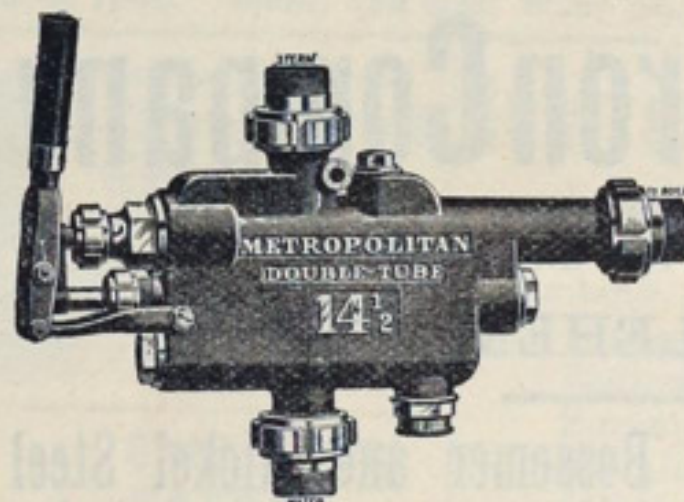
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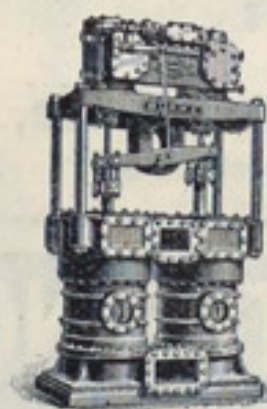
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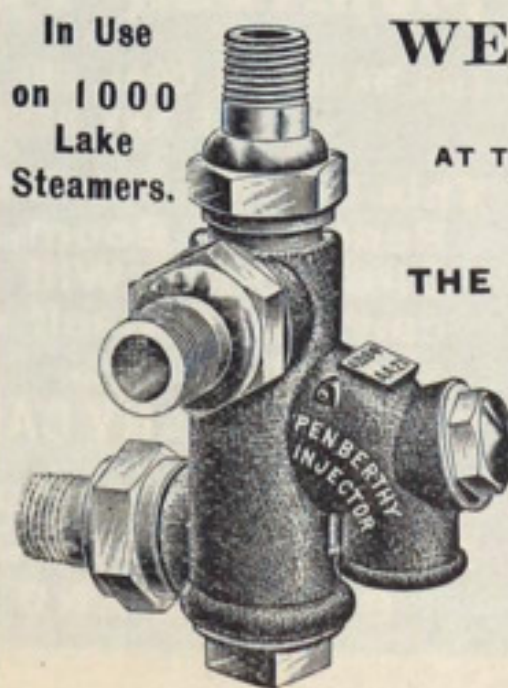
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